



## CLINICAL PROFILE OF PATIENTS OF YOUNG STROKE.

<b>Dr. Nitin Hiranman Suryawanshi</b>	Associate Professor, Department Of Medicine, Smt. Kashibai Navale Medical College And General Hospital, Narhe, Pune.
<b>Dr. Amit Aggarwal*</b>	Associate Professor, Medicine, SKN Medical College And General Hospital Pune Maharashtra. *Corresponding Author
<b>Dr. Abhijit Kadam</b>	PG Student, Medicine, SKN Medical College, Pune.

**ABSTRACT** A study of stroke in young patients has recently become a subject of interest. This is due to a lot of impact on the individual and society. Study of stroke in young patients can lead to therapeutical results affecting both short term and long-term outcomes. **Methods:** Our study is hospital based retrospective study for duration of 1 year. **Results:** This study revealed stroke in young in 25.16% of all stroke cases, with cerebral infarction in 56% and followed by intracerebral haemorrhage in 25.64%, and cerebral venous thrombosis in 18%. The most common presenting symptom was hemiparesis. The most prevalent risk factor for stroke in young was hypertension followed by diabetes mellitus, alcohol consumption and smoking. **Conclusion:** Stroke in young requires a different approach to investigate and treat. This is due to different underlying etiology as compared to elderly. Although traditional risk factors are associated with stroke, behavioural pattern such as smoking and alcohol may cause and promote development of stroke in young.

**KEYWORDS :** Young stroke, cerebral infarction, risk factors.

### INTRODUCTION

Stroke in young, otherwise known as young stroke, is a major public health issue affecting several youngsters as well as a small number of adults who fall under the 45 years.

It has special significance as the affection of economically productive group adds further to overall disease burden.

According to World Health Organization (WHO), stroke has caused about 5.54 million deaths worldwide in 1999 with two-thirds of these deaths occurring in less developed countries<sup>1</sup>. Stroke is also the most common neurological condition causing long-term disability.

A hospital-based study from India showed the proportion of stroke in young ranging between 15% and 30%<sup>2</sup>. In population based study, 8.8% of stroke participants had young stroke<sup>3</sup>.

This study is designed to find out the incidence of young stroke and to study etiology and risk factors in patients of young stroke.

#### 1) Aims and objectives

- To study incidence of young stroke
- To study etiology and risk factors in patients of young stroke

#### 2) Materials and Methods

This was a retrospective observational hospital-based study of stroke in young. The study was conducted on patients admitted in the Department of medicine at SKN Medical College and General hospital, Pune during a period between January 2020 and January 2021.

The study was approved by the institutional ethical committee and all patients gave informed consent prior to inclusion in the study. The case record of 39 patients of young stroke were reviewed.

#### Inclusion criteria

Patients in the age group of 15–45 years who fulfilled the WHO definition of young stroke.

#### Exclusion criteria

- Patients with previous history of stroke
- Patients with a history of head trauma preceding admission and
- Patients with secondary cause of intracerebral bleed like bleed in a tumor were excluded from the study.

Cases fulfilled above criteria were selected for study.

Data was collected according to a predefined protocol. The data was

registered as demographic characteristics, family history, risk factors, neurological examination, and diagnostic data.

The patients underwent neuroimaging initially with computed tomography (CT) scan and later with magnetic resonance imaging (MRI), Magnetic resonance venography (MRV), CT angiography, and digital subtraction angiography (DSA) if necessary. The following tests were also done: blood coagulation profile, routine hemogram, blood glucose, serum lipid profile, electrocardiogram (ECG), echocardiography, carotid Doppler, and chest X-ray. Cerebrospinal fluid (CSF) analysis was done in selected patients.

Stroke was classified as cerebral infarction, Intracerebral hemorrhage (ICH), and Cerebral venous thrombosis (CVT). Etiology and risk factors were studied.

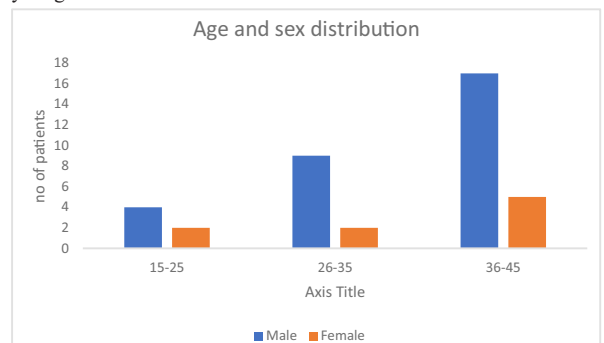
### RESULTS

**Table No 1: Age and sex wise distribution**

Age	Male	Female
15-25	4	2
26-35	9	2
36-45	17	5
Total	30	9

Ratio M: F -3:1.

Total number of patients of young stroke included in study were 39. Total number of all stroke patients in this duration was 155. Stroke in young represented 25.16%. The mean age of onset was 34 years. The ratio of male to female was 3:1, showing higher male preponderance in young stroke.



**Figure No 1**

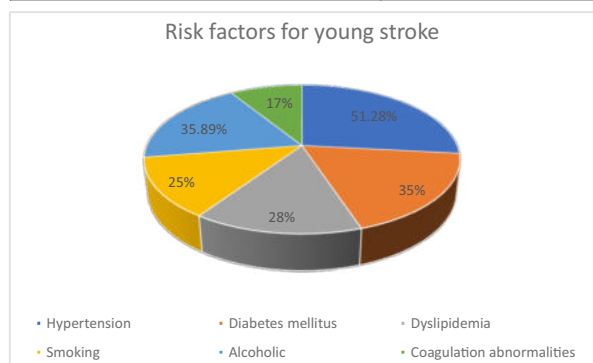
**Table No 2: Symptoms of stroke**

Presenting symptoms	No of patients=39
Hemiparesis	28 (72%)
Speech difficulty	18(46%)
Headache and neck stiffness	9(23%)
Altered sensorium	5(12.8%)
Cranial nerve palsy	2(5.1%)
Seizure	2(5.1%)

Overall the most common presenting symptom was hemiparesis which was seen in 28(72%) patients followed by speech difficulty in 18(46%)patients. 9(23%) patients had headache which was more common in haemorrhagic stroke and in subarachnoid haemorrhage. Altered sensorium was seen in 5(12.8%) patients as presenting symptom. While cranial nerve palsy and seizure present in 2 patient each.

**Table No 3: Risk factors of stroke**

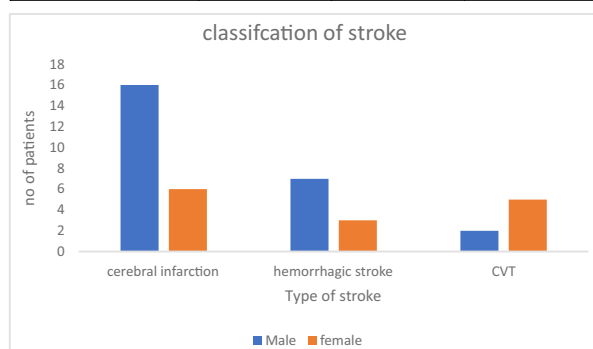
Risk factors	TOTAL=39
Hypertension	20 (51.28%)
Diabetes mellitus	14 (35%)
Dyslipidemia	11 (28%)
Smoking	10 (25%)
Alcoholic	14 (35.89%)
Coagulation abnormalities	7 (17%)



**Figure No 2**

**Table No 3 Classification of stroke**

Type of stroke	Male	female	Total
cerebral infarction	16	6	22(56%)
hemorrhagic stroke	7	3	10(25.64%)
CVT	2	5	7(18%)



**Figure No 3**

**a) Ischemic stroke**

Total number of patient with cerebral infarction were 22(56%). It was more common in males. The most common risk factor in cerebral infarction was hypertension. DM which is also common risk factor in stroke was detected in 14(35%). Similarly dyslipidemia was detected in 11(28%), showing most commonly elevated cholesterol level. The alcohol abuse 14(35.89%) was seen predominantly in males. History of smoking was present in 10(25%).

**a) Hemorrhagic stroke**

The total number of patient with ICH Was 10(25.64%). The ratio of male to female was 2.3:1. The most common risk factor in ICH was

hypertension.

**b) Venous infarct (CVT)**

CVT was detected in 7(18%) patients. Among them 5 were females and 2 were males. 2 of the females were in post-natal period. All the patient had aseptic CVT. Most common site was superior sagittal sinus. Among risk factors Anti thrombin 3 was detected in one patient while hyperhomocystinemia was seen in 2 patients. Protein c and protein s deficiencies are seen in 2 patients.

**DISCUSSION**

Population based stroke incidence studies revealed the rate of total stroke for those aged <45 years ranged from 0.1 to 0.3/1000 person years.<sup>4</sup> while the hospital-based studies across India showed high proportion of young stroke 15 to 30%. However, population-based studies stroke in young found to be 8.8<sup>3</sup>. The present study detected stroke in young in 25.16%.

In our study male preponderance was seen. This is similar to data from Indian<sup>5,6</sup> and western studies<sup>7,8</sup>. The study showed male preponderance in both ischemic and hemorrhagic stroke, while female preponderance in patients with CVT.

Cerebral infarction (56%) was noted as the most common type of stroke in young, followed by ICH (25.64%) and CVT(18%) in our study which is comparable to other studies.

Traditional risk factors such as hypertension, diabetes mellitus and deranged lipid profile was detected in our study, of which hypertension (51.28%) was significantly associated with ischemic stroke which was also reported as risk factor in most of the other studies. Diabetes mellitus was reported as risk factor from India<sup>9</sup> and Switzerland<sup>10</sup> similar to our study. Hypercholesterolemia has been reported in ischemic young stroke<sup>9</sup>.

Modifiable risk factors like smoking and alcohol were found to be significantly associated with ischemic stroke in our study. High alcohol consumption is associate with ischemic stroke.<sup>11</sup>

CVT was found to be 12 times more common in India than in the western countries<sup>3</sup>. CVT is reported in 16.3% of total stroke in young in a hospital based study<sup>12</sup>, which is comparable to our study.

Although infection is a major cause of CVT in young, none of the patients in the present study had infection as a cause of CVT.

There are several limitations to our study. Apart from inadequate number of cases due to COVID-19 pandemic situation, not all the patients underwent all the investigations there by making analysis and interpretation difficult.

**CONCLUSION**

Stroke in young requires a different approach to investigate and treat. This is due to different underlying etiology as compared to elderly. Although traditional risk factors such as hypertension, diabetes mellitus and dyslipidemia are associated with stroke in both elderly and young. Our study showed other modifiable risk factors such as alcohol and smoking were also prevalent risk factor. Thus Unfavorable behavioral patterns may cause and promotes the development of well documented risk factors. There is need of population-based studies in young, which will provide detail information on underlying etiology and incidence rates, in different populations.

**REFERENCES**

- Hussain M, Sharma SR, Jamil M D. A hospital based study of stroke in young from North East India. *Ann Indian Acad Neurol* 2018;21:184-7
- Chopra JS, Prabhakar S, Sondhii JS. Stroke in young: A clinic-radiological study. *Neurol India* 1979;25:160-9.
- Das SK, Banerjee TK, Biswas A, Roy T, Raut DK, Mukherjee CS, et al. A prospective community-based study of stroke in Kolkata, India. *Stroke* 2007;38:906-10.
- Feigin VL, Lawes CM, Bennett DA, Anderson CS. Stroke epidemiology: A review of population-based studies of incidence, prevalence, and case-fatality in the late 20<sup>th</sup> century. *Lancet Neurol* 2003;2:43-53.
- Najyak SD, Nair M, Radhakrishnan K, Sarma PS. Ischaemic stroke in the young adult: Clinical features, risk factors and outcome. *Natl Med J India* 1997;10:107-12.
- Lipska K, Sylaja PN, Sarma PS, Thankappan KR, Kutty VR, Vasana RS, et al. Risk factors for acute ischaemic stroke in young adults in South India. *J Neurol Neurosurg Psychiatry* 2007;78:959-63.
- Lisvoski F, Rousseaux P. Cerebral infarction in young people. A study of 148 patients with early cerebral angiography. *J Neurol Neurosurg Psychiatry* 1991;54:576-9.
- Bogousslavsky J, Regli F. Ischemic stroke in adults younger than 30 years of age. Cause and prognosis. *Arch Neurol* 1987;44:479-82.

9. Prasad K, Singhal KK. Stroke in young: An Indian perspective. *Neurol India* 2010;58:343-50.
10. Arnold M, Halpern M, Meier N, Fischer U, Haefeli T, Kappeler L, *et al.* Age-dependent differences in demographics, risk factors, co-morbidity, etiology, management, and clinical outcome of acute ischemic stroke. *J Neurol* 2008;255:1503-7.
11. von Samowski B, Putaala J, Grittner U, Gaertner B, Schminke U, Curtze S, *et al.* Lifestyle risk factors for ischemic stroke and transient ischemic attack in young adults in the stroke in young Fabry Patients Study. *Stroke* 2013;44:119-25.
12. Chopra JS, Prabhakar S. Clinical features and risk factors in stroke in young. *Acta Neurol Scand* 1979;60:289-300.